



Department of Energy
Under Secretary for Nuclear Security
Administrator, National Nuclear Security Administration
Washington, DC 20585



December 20, 2018

VIA OVERNIGHT UPS MAIL CARRIER

Mr. Richard M. Kacich, Vice President
Los Alamos National Security, LLC
105 Central Park Square
Los Alamos, New Mexico 87545-

WEA-2018-02

Dear Mr. Kacich:

The Department of Energy (DOE) conducted an investigation into the facts and circumstances associated with personnel entry into a room while low oxygen alarms were activating at the Los Alamos National Laboratory (LANL), Technical Area 3, Building 40, on September 13, 2017. The DOE Office of Enterprise Assessments' Office of Enforcement provided the results of the investigation to Los Alamos National Security, LLC, (LANS) on June 13, 2018. LANS subsequently provided written comments regarding factual accuracy in its response to the investigation report to the Office of Enforcement on August 1, 2018. Also as part of the response, LANS requested to enter into a Consent Order with DOE and the National Nuclear Security Administration (NNSA) to resolve the issues identified in the report.

NNSA considers the deficiencies revealed by the event to be of high safety significance. As detailed in the investigation report, a worker was exposed to an oxygen deficient atmosphere while responding to an alarm condition. The event revealed deficiencies in: (1) hazard identification, assessment, prevention and abatement; and (2) management responsibilities and training.

NNSA concludes that LANS violated requirements prescribed under 10 C.F.R. Part 851, *Worker Safety and Health Program*. Accordingly, NNSA hereby issues the enclosed Preliminary Notice of Violation (PNOV), which cites one Severity Level I and one Severity Level II violation. These violations have a potential civil penalty (before mitigation) of \$139,500; however, NNSA considered this event in the overall performance evaluation for fiscal year 2017 and the fee awarded to LANS. Therefore, in accordance with 10 C.F.R. § 851.5(c), NNSA proposes no civil penalties for the Part 851 violations cited in this PNOV.

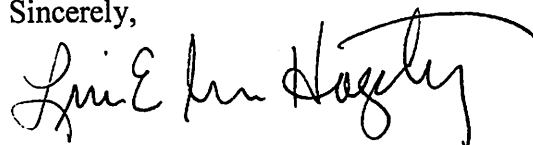
LANS conducted causal factors and extent-of-conditions analyses of the entry into an oxygen deficient environment event and developed corrective actions that addressed some of the deficiencies specific to the event. NNSA found the LANS corrective action plan to be inadequate in that it did not fully address program deficiencies or provide a



sense of confidence that issues would be resolved in enough depth to prevent recurrence of a similar event in the future.

Pursuant to 10 C.F.R. § 851.42, *Preliminary Notice of Violation*, you are obligated to submit a written reply within 30 calendar days of receipt of the enclosed PNOV and to follow the instructions specified in the PNOV when preparing your response. If you fail to submit a reply within 30 calendar days, then in accordance with 10 C.F.R. § 851.42(d), you relinquish any right to appeal any matter in the PNOV, and the PNOV will constitute a final order.

Sincerely,

A handwritten signature in black ink, appearing to read "Lisa E. Gordon-Hagerty". The signature is fluid and cursive, with a large, sweeping flourish at the end.

Lisa E. Gordon-Hagerty

Enclosures: Preliminary Notice of Violation (WEA-2018-02)

cc: William Goodrum, NA-LA

Preliminary Notice of Violation

Los Alamos National Security, LLC
Los Alamos National Laboratory
Los Alamos, New Mexico

WEA-2018-02

A U.S. Department of Energy (DOE) investigation into the facts and circumstances associated with program deficiencies revealed by an event in which a worker entered room S131 in building SM-40 at the Los Alamos National Laboratory (LANL) while low oxygen alarms were activated and sounding on September 13, 2017, identified violations of DOE worker safety and health requirements by Los Alamos National Security, LLC, (LANS).

Pursuant to Section 234C of the Atomic Energy Act of 1954, as amended, and DOE regulations set forth at 10 C.F.R. Part 851 (Part 851), *Worker Safety and Health Program*, the National Nuclear Security Administration (NNSA) hereby issues this Preliminary Notice of Violation (PNOV) to LANS. The violations cited in this PNOV include deficiencies in: (1) hazard identification, assessment, prevention and abatement, and (2) management responsibilities and training. NNSA has grouped and categorized the violations as one Severity Level I and one Severity Level II violation.

Severity Levels are explained in Part 851, Appendix B, *General Statement of Enforcement Policy*. Subparagraph VI(b)(1) states that “[a] Severity Level I violation is a serious violation. A serious violation shall be deemed to exist in a place of employment if there is a potential that death or serious physical harm could result from a condition which exists, or from one or more practices, means, methods, operations, or processes which have been adopted or are in use, in such place of employment.”

Subparagraph VI(b)(1) for Part 851 states that “[a] Severity Level I violation is a serious violation. A serious violation shall be deemed to exist in a place of employment if there is a potential that death or serious physical harm could result from a condition which exists, or from one or more practices, means, methods, operations, or processes which have been adopted or are in use, in such place of employment.”

Subparagraph VI(b)(2) of Part 851 states that “[a] Severity Level II violation is an other-than-serious violation. An other-than-serious violation occurs where the most serious injury or illness that would potentially result from a hazardous condition cannot reasonably be predicted to cause death or serious physical harm to employees but does have a direct relationship to their safety and health.”

NNSA considered this event in the amount of earned fee withheld from LANS in fiscal year 2017 for safety and health performance. Therefore, in accordance with the provisions of 10 C.F.R. § 851.5(b) and DOE Acquisition Regulation 48 C.F.R. § 970.5215-3, *Conditional*

Payment of Fee, Profit, and Other Incentives—Facility Management Contract clause, NNSA proposes no civil penalty for the violations cited in this PNOV.

As required by 10 C.F.R. § 851.42(b) and consistent with Part 851, Appendix B, the violations are listed below. If this PNOV becomes a final order, then LANS may be required to post a copy of this PNOV in accordance with 10 C.F.R. § 851.42(e).

I. VIOLATIONS

A. Hazard Identification, Assessment, Prevention, and Abatement

Title 10 C.F.R. § 851.10, *General requirements*, subsection (a), states that “[w]ith respect to a covered workplace for which a contractor is responsible, the contractor must: . . . (2) [e]nsure that work is performed in accordance with: (i) [a]ll applicable requirements of [10 C.F.R. Part 851]; and (ii) [w]ith the worker safety and health program for that workplace.”

Title 10 C.F.R. § 851.21, *Hazard identification and assessment*, subsection (a), states: “[c]ontractors must establish procedures to identify existing and potential workplace hazards and assess the risk of associated workers injury and illness” and “[p]rocedures must include methods to: (1) [a]ssess worker exposure to chemical, physical, biological, or safety workplace hazards through appropriate workplace monitoring; (2) [d]ocument assessments for chemical, physical, biological, and safety workplace hazards using recognized exposure assessment and testing methodologies . . . ; (4) [a]nalyze designs of new facilities and modifications to existing facilities and equipment for potential workplace hazards; (5) [e]valuate operations, procedures, and facilities to identify workplace hazards....”

Subsection (c) states that “[c]ontractors must perform the activities identified in paragraph (a) of this section, initially to obtain baseline information and as often thereafter as necessary to ensure compliance with the requirements in [Subpart C of 10 C.F.R. Part 851].”

Title 10 C.F.R. § 851.22, *Hazard prevention and abatement*, subsection (a), states that “[c]ontractors must establish and implement a hazard prevention and abatement process to ensure that all identified and potential hazards are prevented or abated in a timely manner.” Subsection (a) further states: “(1) [f]or hazards identified either in the facility design or during the development of procedures, controls must be incorporated in the appropriate facility design or procedure.” Subsection (b) states that “[c]ontractors must select hazard controls based on the following hierarchy: (1) [e]limination or substitution of the hazards where feasible and appropriate; (2) [e]ngineering controls where feasible and appropriate; (3) [w]ork practices and administrative controls that limit worker exposures; and (4) [p]ersonal protective equipment.”

LANS Program Description (PD) document PD100, Revision 3, *DOE/NNSA Approved Los Alamos National Laboratory 10 CFR 851 Worker Safety and Health Program Description* (effective June 8, 2017), establishes and describes the LANL Worker Safety and Health Program (WSHP) prescribed under Part 851. LANS WSHP implementing instructions are further described in SD100, Revision 6, *Integrated Safety Management System Description*,

effective date January 26, 2017, which are stated by LANS as elements of safety management delivery, work planning, and control that are part of the execution of the LANS WSHP. SD100 requirements include the development of emergency plans and integrated work documents (IWDs). The emergency plan for Science and Technology Operations (STO) is detailed in document STO-BEP-001, Revision 1.2, *STO Division Building Emergency Plan for STO Complex*, dated February 21, 2017. Specific safety and health instructions for the Thermal Vacuum (TVAC) operation are described in IWD TA-3-40-S131A, Revision 2, dated March 20, 2017, *TVAC Operation*.

Contrary to these requirements and as evidenced by the following facts, LANS failed to adequately ensure that work was performed in accordance with the applicable requirements of Part 851, PD100 *DOE/NNSA Approved Los Alamos National Laboratory 10 CFR 851 Worker Safety and Health Program Description*, and associated implementing instruction. The assessment and control of hazards and the emergency planning documentation, guidance, and signage were inadequate, incomplete, or conflicting. Specific examples include the following:

1. LANS failed to properly assess available pressure relief valves in that it installed a version inappropriate for the changed condition presented by the addition of the Adjustable Pressure Phase Separator, which caused the pressure relief valve to freeze in the open position when challenged during overnight operations. This hazard, which was not adequately controlled, directly led to the event.
2. LANS did not update or adequately review document STO-BEP-001 *STO Division Building Emergency Plan for STO Complex* to address the oxygen alarm system and response to alarm conditions. The low oxygen alarm posting in the room was located at a height not obvious to workers and did not include emergency contact procedures and information. Signage outside room S131 conflicted with response requirements specified in IWD TA-3-40-S131A, Revision 2, *TVAC Operation*.

Collectively, these noncompliance's constitute a Severity Level I violation.

B. Management Responsibilities and Training

Title 10 CFR § 851.20, *Management Responsibilities and Worker Rights and Responsibilities*, subsection (a), *Management Responsibilities*, states: “[c]ontractors are responsible for the safety and health of their workforce and must ensure that contractor management at a covered workplace: . . . (3) [a]ssign worker safety and health program responsibilities, evaluate personnel performance, and hold personnel accountable for worker safety and health performance.”

Title 10 C.F.R. § 851.25, *Training and information*, subsection (a), states that “[c]ontractors must develop and implement a worker safety and health training and information program to ensure that all workers exposed or potentially exposed to hazards are provided with training and information on that hazard in order to perform their duties in a safe and healthful manner.” Subsection (c) states that “[c]ontractors must provide training and information to

workers who have worker safety and health program responsibilities that is necessary for them to carry out those responsibilities.”

LANS document PD100, Section 3.0, *Program Description*, states that “[it] is the policy of the Laboratory that all managers and workers implement the requirements of the Laboratory’s safety and health programs, and plan work in accordance with ISMS [Integrated Safety Management System] core principles to prevent accidents and enhance safety.”

LANS document PD100, Section 3.7.1, *Pause/Stop Work and Restart*, states that “[a]ll Laboratory workers (as defined in Section 2.2) have the authority and responsibility (and are encouraged without reprisal) to decline to perform an assigned task because of a reasonable belief that the task poses a safety, health, environmental, procedural, security, or waste generation noncompliance concern or an imminent danger or other hazard, coupled with a reasonable belief that there is insufficient time to seek effective redress through the normal reporting and abatement process. They may also pause/stop work when they discover unsafe conditions, environmental risk, quality defects, or other hazards. This ensures that hazardous conditions can be brought to the attention of management and be corrected before work resumes. Pause/Stop Work is described in P101-18, *Procedure for Pause/Stop Work*.”

LANS IWD TA-3-40-S131A, Revision 2, *TVAC Operations*, states in Step 1, *System Operation*, that “[w]all-mounted O₂ [oxygen] Sensors with alarms have been installed to detect any low oxygen levels due to potential LN₂ [liquid nitrogen] or GN₂ [gaseous nitrogen] leaks. In the event of an alarm, personnel shall vacate the premises and: 1) Have an operator close the valve to the LN₂ tank located outside the south wing of SM-40; 2) Contact EM&R [Emergency Management and Response] and ensure no other workers enter the room; 3) Wait for an all clear from EM&R personnel to reenter the room.”

LANS SD100, Revision 6, *References, Emergency Response* identifies “PD1200, *Emergency Response*.” LANS document PD1200, Revision 4, effective October 5, 2016, Section 4.0, *Responsibilities*, contains the following subsections with related responsibilities:

“4.7 Security and Emergency Operations-Integrated Services Group (SEO-4) Personnel

- Implement the comprehensive exercise program plan, including the design, development, conduct, evaluation, and documentation of emergency-management exercises.
- Assist Laboratory groups with developing their scenario-based exercises for occupied buildings with hazardous materials or operations.
- Conduct emergency drills
- Manage the BEP [Building Emergency Plan] Program.”

“4.12 Facility Operations Directors

- Ensure that employees understand both their responsibilities in an emergency and the emergency-notification requirements.

- Work with [Security and Emergency Operations] SEO-4 if any changes occur in security or access to the building, operations, or building configuration and if there are changes in safety-basis quantities, planned and actual significant changes in hazards, and material operations or inventories”

Contrary to these requirements and considering the full details of the entry into an oxygen deficient environment event, LANS did not adequately satisfy its responsibility for ensuring the safety and health of its workforce. Specifically, LANS did not adequately train all impacted workers in procedures to activate emergency response during a low oxygen alarm in room S131. LANS did not conduct emergency drills and/or exercises that included scenarios involving conditions such as an oxygen deficient atmosphere. Emergency drills and exercises would allow all LANS personnel to practice the necessary response procedures, become familiar with activating emergency response, implement policy to account for workers, and execute follow-up actions (including providing medical attention to impacted workers).

This noncompliance constitutes a Severity Level II violation.

II. REPLY

Pursuant to 10 C.F.R. § 851.42(b)(4), LANS is hereby obligated to submit a written reply within 30 calendar days of receipt of this PNOV. The reply should be clearly marked as a “Reply to the Preliminary Notice of Violation.”

If LANS chooses not to contest the violations set forth in this PNOV, then the reply should clearly state that LANS waives the right to contest any aspect of this PNOV. In such case, this PNOV will constitute a final order upon the filing of the reply.

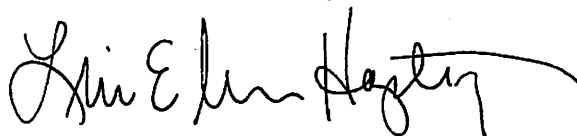
If LANS disagrees with any aspect of this PNOV, then as applicable and in accordance with 10 C.F.R. § 851.42(c)(1), the reply must: (1) state any facts, explanations, and arguments that support a denial of an alleged violation; and (2) discuss the relevant authorities that support the position asserted, including rulings, regulations, interpretations, and previous decisions issued by DOE. In addition, 10 C.F.R. § 851.42(c)(2) requires that the reply include copies of all relevant documents.

If LANS fails to submit a written reply within 30 calendar days of receipt of this PNOV, then pursuant to 10 C.F.R. § 851.42(d), LANS relinquishes any right to appeal any matter in this PNOV and this PNOV will constitute a final order.

Please send the appropriate reply by overnight carrier to the following address:

Director, Office of Enforcement
Attention: Office of the Docketing Clerk, EA-10
U.S. Department of Energy
19901 Germantown Road
Germantown, Maryland 20874-1290

A copy of the reply should also be sent to the Manager of the Los Alamos Field Office.



Lisa E. Gordon-Hagerty
Under Secretary for Nuclear Security
Administrator, NNSA

Washington, D.C.
This 7th day of December 2018